

**IN THE UNITED STATES PATENT AND TRADEMARK OFFICE**

In re Application of:

SAKAMOTO et al.

Art Unit: Unknown

Application No. Unknown

Examiner: Unknown

Filed: December 5, 2001

For: FERTILIZER, PROCESS FOR  
PRODUCING THE SAME, PROCESS  
FOR CONTROLLING INORGANIZING  
SPEED OF UREA/ALIPHATIC  
ALDEHYDE CONDENSATION  
PRODUCT, AND PROCESS FOR  
GROWING CROPS

**PRELIMINARY AMENDMENT**

Commissioner for Patents  
Washington, D.C. 20231

Dear Sir:

Prior to the examination of the above-identified patent application, please enter the following amendments and consider the following remarks.

*IN THE CLAIMS:*

Replace the indicated claims with:

1. (Amended) A fertilizer comprising a sparingly water-soluble phosphatic fertilizer and a urea/aliphatic aldehyde condensation product.

2. (Amended) The fertilizer as described in claim 1 wherein the sparingly water-soluble phosphatic fertilizer has elution characteristics where after the sparingly water-soluble phosphatic fertilizer is dipped in 2 weight percent aqueous solution of citric acid at 30°C in the weight ratio as shown by the following equation, the time required to allow elution of 80 weight percent of phosphate components contained in the phosphatic fertilizer into the aqueous solution of citric acid ranges from 0.1 to 2000 minutes.

Equation: 
$$\frac{\text{(Sparingly Water-Soluble Phosphatic Fertilizer)}}{\text{(2 Weight Percent Aqueous Solution of Citric Acid)}} \text{ (in Weight Ratio)} = 0.0127$$

3. (Amended) The fertilizer as described in claim 1 wherein the sparingly water-soluble phosphatic fertilizer comprises one or more selected from phosphorus ore, fused phosphate fertilizer, and calcined phosphate fertilizer.

5. (Amended) The fertilizer as described in claim 1 wherein the urea/aliphatic aldehyde condensation product comprises 2-oxo-4-methyl-6-ureidohexahydropyrimidine or formaldehyde-condensed urea.

7. (Amended) The fertilizer as described in claim 1 wherein the fertilizer comprises a particulate form.

9. (Amended) The fertilizer as described in claim 7 further comprising a water-repellent substance.

11. (Amended) The fertilizer as described in claim 9 wherein the water-repellent substance comprises one or more selected from natural wax and synthetic wax.

12. (Amended) The fertilizer as described in claim 11 wherein the natural wax comprises one or more selected from hardened castor oil and derivatives thereof.

14. (Amended) A process for producing the fertilizer as described in claim 9 comprising a step of particles granulation by use of the water-repellent substance, the sparingly water-soluble phosphatic fertilizer, the urea/aliphatic aldehyde condensation product, and water as raw materials and a step of drying the particles by use of a gas held at a temperature not lower than a melting point of the water-repellent substance and not higher than 500°C.

17. (Amended) The process as described in claim 14 wherein the water-repellent substance comprises a particulate.

20. (Amended) A process for controlling an inorganizing speed of a urea/aliphatic aldehyde condensation product comprising adding to the urea/aliphatic aldehyde condensation product a sparingly water-soluble phosphatic fertilizer having elution characteristics where after the sparingly water-soluble phosphatic fertilizer is dipped in 2 weight percent aqueous solution of citric acid at 30°C in the weight ratio as shown in the following equation, the time required to allow elution of 80 weight percent of phosphate

components contained in the phosphatic fertilizer into the aqueous solution of citric acid ranges from 0.1 to 2000 minutes.

Equation: (Sparingly Water-Soluble Phosphatic Fertilizer)/(2 Weight Percent Aqueous Solution of Citric Acid) (in Weight Ratio) = 0.0127

22. (Amended) The process as described in claim 20 wherein the urea/aliphatic aldehyde condensation product comprises 2-oxo-4-methyl-6-ureidohexahydropyrimidine or formaldehyde-condensed urea.

23. (Amended) The process as described in claim 20 further comprising adding a water-repellent substance.

25. (Amended) The process as described in claim 23 wherein the water-repellent substance comprises one or more selected from natural wax and synthetic wax.

26. (Amended) The process as described in claim 25 wherein the natural wax comprises one or more selected from hardened castor oil and derivatives thereof.

28. (Amended) A urea/aliphatic aldehyde condensation product having an inorganizing speed controlled by the process for controlling the inorganizing speed as described in claim 23.

29. (Amended) A process for growing crops characterized by using the fertilizer as described in claim 1.

**REMARKS**

The foregoing amendment removes multiple dependencies, perfects antecedent basis, and corrects minor typographical errors in the claims. No new matter is added.

Further, the Examiner is requested to enter these amendments prior to calculating the claim fee due.

Conclusion

If, in the opinion of the Examiner, a telephone conference would expedite the prosecution of the subject application, the Examiner is invited to call the undersigned attorney.

Respectfully submitted,

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CONDENSATION PRODUCT, AND  
PROCESS FOR GROWING CROPS

**AMENDMENTS TO SPECIFICATION, CLAIMS AND  
ABSTRACT MADE VIA PRELIMINARY AMENDMENT**

*Amendments to existing claims:*

1. (Amended) A fertilizer ~~containing~~ comprising a sparingly water-soluble phosphatic fertilizer and a urea/aliphatic aldehyde condensation product.

2. (Amended) The fertilizer as described in claim 1 wherein the sparingly water-soluble phosphatic fertilizer ~~having~~ has elution characteristics where after the sparingly water-soluble phosphatic fertilizer is dipped in 2 weight percent aqueous solution of citric acid at 30°C in the weight ratio as shown by the following equation, the time required to allow elution of 80 weight percent of phosphate components contained in the phosphatic fertilizer into the aqueous solution of citric acid ranges from 0.1 to 2000 minutes.

Equation: (Sparingly Water-Soluble Phosphatic Fertilizer)/(2 Weight Percent Aqueous Solution of Citric Acid) (in Weight Ratio) = 0.0127

3. (Amended) The fertilizer as described in claim 1 wherein the sparingly water-soluble phosphatic fertilizer ~~is~~ comprises one or more selected from phosphorus ore, fused phosphate fertilizer, and calcined phosphate fertilizer.

5. (Amended) The fertilizer as described in claim 1 wherein the urea/aliphatic aldehyde condensation product ~~is~~ comprises 2-oxo-4-methyl-6-ureidohexahydropyrimidine or formaldehyde-condensed urea.

7. (Amended) The fertilizer as described in claim 1 wherein the ~~form is~~ fertilizer comprises a particulate form.

9. (Amended) The fertilizer as described in claim 7 further ~~containing therein~~ comprising a water-repellent substance.

11. (Amended) The fertilizer as described in claim 9 wherein the water-repellent substance ~~is~~ comprises one or more selected from natural wax and synthetic wax.

12. (Amended) The fertilizer as described in claim 11 wherein the natural wax ~~is~~ comprises one or more selected from hardened castor oil and derivatives thereof.

14. (Amended) A process for producing the fertilizer as described in claim 9 comprising a step of particles granulation by use of the water-repellent substance, the sparingly water-soluble phosphatic fertilizer, the urea/aliphatic aldehyde condensation product, and water as raw materials ~~(step of granulation)~~ and a step of drying the particles by use of a gas held at a temperature not lower than a melting point of the water-repellent substance and not higher than 500°C ~~(step of drying)~~.

17. (Amended) The process as described in claim 14 wherein the water-repellent substance ~~is~~ comprises a particulate.

20. (Amended) A process for controlling an inorganizing speed of ~~the a~~ urea/aliphatic aldehyde condensation product ~~characterized by~~ comprising adding to the urea/aliphatic aldehyde condensation product a sparingly water-soluble phosphatic fertilizer having elution characteristics where after the sparingly water-soluble phosphatic fertilizer is dipped in 2 weight percent aqueous solution of citric acid at 30°C in the weight ratio as shown in the following equation, the time required to allow elution of 80 weight percent of phosphate components contained in the phosphatic fertilizer into the aqueous solution of citric acid ranges from 0.1 to 2000 minutes.

Equation: (Sparingly Water-Soluble Phosphatic Fertilizer)/(2 Weight Percent Aqueous Solution of Citric Acid) (in Weight Ratio) = 0.0127

22. (Amended) The process as described in claim 20 wherein the urea/aliphatic aldehyde condensation product ~~is~~ comprises 2-oxo-4-methyl-6-ureidohexahydropyrimidine or formaldehyde-condensed urea.

23. (Amended) The process as described in claim 20 ~~characterized by~~ further comprising adding ~~further~~ a water-repellent substance.

25. (Amended) The process as described in claim 23 wherein the water-repellent substance ~~is~~ comprises one or more selected from natural wax and synthetic wax.

26. (Amended) The process as described in claim 25 wherein the natural wax ~~is~~ comprises one or more selected from hardened castor oil and derivatives thereof.

28. (Amended) A urea/aliphatic aldehyde condensation product having an inorganizing speed controlled by the process for controlling the inorganizing speed as described in ~~any one of claims~~ claim 23 ~~to 27~~.

29. (Amended) A process for growing crops characterized by using the fertilizer as described in ~~any one of claims~~ claim 1 ~~to 13~~.

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PROCESS FOR GROWING CROPS

**PENDING CLAIMS AFTER ENTRY OF PRELIMINARY AMENDMENT**

1. A fertilizer comprising a sparingly water-soluble phosphatic fertilizer and a urea/aliphatic aldehyde condensation product.

2. The fertilizer as described in claim 1 wherein the sparingly water-soluble phosphatic fertilizer has elution characteristics where after the sparingly water-soluble phosphatic fertilizer is dipped in 2 weight percent aqueous solution of citric acid at 30°C in the weight ratio as shown by the following equation, the time required to allow elution of 80 weight percent of phosphate components contained in the phosphatic fertilizer into the aqueous solution of citric acid ranges from 0.1 to 2000 minutes.

Equation: (Sparingly Water-Soluble Phosphatic Fertilizer)/(2 Weight Percent Aqueous Solution of Citric Acid) (in Weight Ratio) = 0.0127

3. The fertilizer as described in claim 1 wherein the sparingly water-soluble phosphatic fertilizer comprises one or more selected from phosphorus ore, fused phosphate fertilizer, and calcined phosphate fertilizer.

4. The fertilizer as described in claim 1 wherein the ratio of the sparingly water-soluble phosphatic fertilizer to the urea/aliphatic aldehyde condensation product ranges from 0.01 to 5 weight percent in conversion to P<sub>2</sub>O<sub>5</sub>.



5. The fertilizer as described in claim 1 wherein the urea/aliphatic aldehyde condensation product comprises 2-oxo-4-methyl-6-ureidohexahydropyrimidine or formaldehyde-condensed urea.

6. The fertilizer as described in claim 1 wherein the ratio of a water-soluble phosphoric acid contained to the urea/aliphatic aldehyde condensation product is 0.5 weight percent or less in conversion to  $P_2O_5$ .

7. The fertilizer as described in claim 1 wherein the fertilizer comprises a particulate form.

8. The fertilizer as described in claim 7 wherein the particle size ranges from 1 to 50 millimeters.

9. The fertilizer as described in claim 7 further comprising a water-repellent substance.

10. The fertilizer as described in claim 9 wherein the water-repellent substance has a melting point falling in the range of from 60 to 130°C.

11. The fertilizer as described in claim 9 wherein the water-repellent substance comprises one or more selected from natural wax and synthetic wax.

12. The fertilizer as described in claim 11 wherein the natural wax comprises one or more selected from hardened castor oil and derivatives thereof.

13. The fertilizer as described in claim 9 wherein the ratio of the water-repellent substance to the total amount of the sparingly water-soluble phosphatic fertilizer, the water-repellent substance, and the urea/aliphatic aldehyde condensation product ranges from 0.1 to 20 weight percent.

14. A process for producing the fertilizer as described in claim 9 comprising a step of particles granulation by use of the water-repellent substance, the sparingly water-soluble phosphatic fertilizer, the urea/aliphatic aldehyde condensation product, and water as raw materials and a step of drying the particles by use of a gas held at a temperature not lower than a melting point of the water-repellent substance and not higher than 500°C.

15. The process as described in claim 14 wherein the temperature of the raw materials in the step of granulation is a temperature from 0 to 40°C lower than the melting point of the water-repellent substance.

16. The process as described in Claim 14 wherein the granulation of the particles in the step of granulation is carried out by use of a stirring-type mixing granulator.

17. The process as described in claim 14 wherein the water-repellent substance comprises a particulate.

18. The process as described in claim 17 wherein the particle size of the particulate water-repellent substance ranges from 0.005 to 1 millimeter.

19. The process as described in claim 14 wherein the ratio of water ranges from 5 to 30 weight percent to the total amount of the water-repellent substance, the sparingly water-soluble phosphatic fertilizer, and the urea/aliphatic aldehyde condensation product.

20. A process for controlling an inorganizing speed of a urea/aliphatic aldehyde condensation product comprising adding to the urea/aliphatic aldehyde condensation product a sparingly water-soluble phosphatic fertilizer having elution characteristics where after the sparingly water-soluble phosphatic fertilizer is dipped in 2 weight percent aqueous solution of citric acid at 30°C in the weight ratio as shown in the following equation, the time required to allow elution of 80 weight percent of phosphate components contained in the phosphatic fertilizer into the aqueous solution of citric acid ranges from 0.1 to 2000 minutes.

Equation: (Sparingly Water-Soluble Phosphatic Fertilizer)/(2 Weight Percent Aqueous Solution of Citric Acid) (in Weight Ratio) = 0.0127

21. The process as described in claim 20 wherein the ratio of the sparingly water-soluble phosphatic fertilizer to the urea/aliphatic aldehyde condensation product ranges from 0.01 to 5 weight percent in conversion to P<sub>2</sub>O<sub>5</sub>.

22. The process as described in claim 20 wherein the urea/aliphatic aldehyde condensation product comprises 2-oxo-4-methyl-6-ureidohexahydropyrimidine or formaldehyde-condensed urea.

23. The process as described in claim 20 further comprising adding a water-repellent substance.

24. The process as described in claim 23 wherein the water-repellent substance has a melting point falling in the range of from 60 to 130°C.

25. The process as described in claim 23 wherein the water-repellent substance comprises one or more selected from natural wax and synthetic wax.

26. The process as described in claim 25 wherein the natural wax comprises one or more selected from hardened castor oil and derivatives thereof.

27. The process as described in claim 23 wherein the ratio of the water-repellent substance to the total amount of the sparingly water-soluble phosphatic fertilizer, the water-repellent substance, and the urea/aliphatic aldehyde condensation product ranges from 0.1 to 20 weight percent.

28. A urea/aliphatic aldehyde condensation product having an inorganizing speed controlled by the process for controlling the inorganizing speed as described in claim 23.

29. A process for growing crops characterized by using the fertilizer as described in claim 1.

30. A process for growing crops characterized by using the urea/aliphatic aldehyde condensation product as described in claim 28.